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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,161	08/07/2003	Mohsen Sarraf	34-20	3605
7590 06/19/2006				
Ryan, Mason & Lewis, LLP Suite 205 1300 Post Road Fairfield, CT 06824		EXAMINER NGUYEN, PHUONGCHAU BA		
		ART UNIT PAPER NUMBER 2616		

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/636,161

Applicant(s)

SARRAF ET AL.

Examiner

Phuongchau Ba Nguyen

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/7/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. It should avoid using phrases which can be implied, such as, "are disclosed"(abstract, line 1), "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

***Claim Objections***

2. Claims 4-7, 13-16 are objected to because of the following informalities: the abbreviation, IBOC, recited in claims 4-7, 13-16 should be changed to --- IBOC (In-Band-On-Channel)---. Appropriate correction is required.

***Claim Rejections – 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors

Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 8–9 are rejected under 35 U.S.C. 102(e) as being anticipated by Engelbrecht.

**Regarding claim 1:**

Engelbrecht (5,912,917) discloses a method of transmitting a plurality of sub-streams in a multi-stream digital audio broadcasting (DAB) system {abstract, lines 1-6; figs. 5, 7-9, col.4, line 16-col.6, line 26}, wherein the method comprising the steps of:

allocating a unique frequency partition to each of said sub-streams (program channel) {F1-F25, fig.3};

allocating a unique time slot to each of said sub-streams {T1-Tn; fig.3};

transmitting said sub-streams to a receiver (user) {fig.27; col.7, lines 1-36}.

**Regarding claim 8:**

Engelbrecht further discloses that no two sub-streams associated with the same audio segment are transmitted in the same time slot {fig.3 wherein each program channel (substream) are transmitted in different timeslot; Engelbrecht; col.3, lines 25-35}.

**Regarding claim 9:**

Engelbrecht further discloses that a unique time slot is allocated to each of said sub-streams by introducing a delay between each of said sub-streams {fig.5 in Engelbrecht; col.4, lines 30-33}.

5. Claim 10 is rejected under 35 U.S.C. 102(e) as being anticipated by Kroeger '317.

Kroeger (6,178,317) discloses in figures 1, 3-4 a transmitter in a multi-stream digital audio broadcasting (DAB) system, comprising:

a modulator 160 for allocating a unique frequency partition to each of said substreams;

a delay circuit 116 for allocating a unique time slot to each of said sub-streams; and

a transmitter for 120 transmitting said sub-streams to a receiver 140.

***Claim Rejections – 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2–7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelbrecht in view of Kroeger (6,430,227).

Regarding claim 2: Engelbrecht discloses all the claimed limitations except “said sub-streams include at least two core streams and at least two enhancement streams”.

However, in the same field of endeavor, Kroeger (6,430,227) discloses that said sub-streams (30, 32 in fig.1) include at least two core streams (figs.3–4) and at least two enhancement streams (figs 3–4){col.4, lines 43–44}.

Therefore, it would have been obvious to an artisan to apply Kroeger’s teaching into Engelbrecht’s system and the motivation being to provide better signal

quality with less noise and wider dynamic range than with existing FM radio channel {col.1, lines 28–30}.

**Regarding claim 3:** Engelbrecht discloses all the claimed limitations, except “said core sub streams have a maximum separation in the time domain”.

However, in the same field of endeavor, Kroeger ‘227 discloses that said core sub-streams have a maximum separation in the time domain {col.6, lines 38–39}. Therefore, it would have been obvious to an artisan to apply Kroeger’s teaching (‘227) into Engelbrecht’s system and the motivation being to enhance backup performance of backup and protection for the main channel {col.6, lines 38–41, 46–49; Kroeger ‘227}.

**Regarding claim 4:** Engelbrecht discloses all the claimed limitations, except “wherein said multi-stream digital audio broadcasting system is an all digital IBOC system and said core sub-streams have a maximum separation in the frequency domain”.



However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system {fig.1, col.3, line2}, and said core sub-streams have a maximum separation in the frequency domain {figs 3-4}(claim 4). Therefore, it would have been obvious to an artisan to apply Kroeger's teaching into Engelbrecht's system and the motivation being to provide digital quality audio to listeners from broadcasters {col.1, lines 18-19, Kroeger '227}.

Regarding claim 5: Engelbrecht discloses all the claimed limitations, except "wherein multi-stream digital audio broadcasting system is a hybrid IBOC system and said core sub-streams are transmitted in the frequency domain in the innermost side bands".

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is a hybrid IBOC (HIBOC) system {fig.1} and said core sub-streams are transmitted in the frequency domain in the innermost side bands {34, 44 in figs.3-4}. Therefore, it would have been obvious to an artisan to apply Kroeger's teaching ('227) of

implementing the original hybrid IBOC into all-digital IBOC format in Engelbrecht's system with new sidebands at 15 dB below and the motivation being to prevent interference or interruption because the core-substreams are too close to the center of the channel (26 in figure 3){col.4, lines 54-57; Kroeger '227}.

**Regarding claim 6:** Engelbrecht discloses all the claimed limitations, except "wherein said multi-stream digital audio broadcasting system is an all digital IBOC system and each of said core sub-streams has a maximum separation from one of said enhancement sub-streams in the frequency domain and a maximum separation from the other enhancement sub-stream in the time domain".

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system and each of said core sub-streams (40 in fig.3) has a maximum separation from one of said enhancement sub-streams (36 in fig.3) in the frequency domain (40 at 101,381-115,189 Hz and 36 at 184,230-198,038 Hz

of frequency band) but not a maximum separation from the other enhancement sub-stream (46 in fig.4) in the time domain.

Engelbrecht further discloses in figures 3&5 wherein each sub-stream (program channel) has a unique time slot and frequency. Therefore, it would have been obvious to apply Kroeger's teaching ('227) of enhancement and core sideband substreams into Engelbrecht's system wherein substream being separated in time, and the motivation being to prevent interference in between frequencies slots {col.3, lines 52-55, Kroeger '227} and to provide excellent quality audio to listeners {col.4, lines 30-32, 41-44, Kroeger '227}.

**Regarding claim 7:** Engelbrecht discloses all the claimed limitations, except "wherein said multi-stream digital audio broadcasting system is an all digital IBOC system and said core sub-streams are separated by a data stream".

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system (fig.2) and said core sub-streams are separated by a data stream (26 in fig.2). Therefore, it would have been obvious to an artisan to apply Kroeger

teaching into Engelbrecht's system and the motivation being to prevent interference to all-digital IBOC signals {col.3, lines 57-59; Kroeger '227}.

8. Claims 11, 13-14, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroeger (6,178,317) in view of Kroeger (6,430,227).

**Regarding claims 11, 13:**

Kroeger '317 does not explicitly the features in claim 11.

Kroeger '317 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system and said modulator 160 provides a maximum separation of said core sub-streams in the frequency domain {col.6, lines 62-65; Kroeger '317} (claim 13).

However, in the same field of endeavor, Kroeger '227 discloses that said sub-streams (30, 32 in fig.1) include at least two core streams (figs.3-4) and at least two enhancement streams (figs 3-4){col.4, lines 43-44} (claim 11).

Therefore, it would have been obvious to an artisan to apply Kroeger's('227) teaching into Kroeger's ('317) system and the motivation being to provide

better signal quality with less noise and wider dynamic range than with existing FM radio channel {col.1, lines 28–30; Kroeger'227}.

**Regarding claim 14:** Kroeger '317 discloses all the claimed limitations, except “wherein said multi-stream digital audio broadcasting system is a hybrid IBOC system and said modulator allocates said core sub-streams in the frequency domain to the innermost side bands”.

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is a hybrid IBOC (HIBOC) system and said modulator 160 allocates said core substreams in the frequency domain to the innermost side bands {figs.3–4 in Kroeger '227}. Therefore, it would have been obvious to an artisan to apply Kroeger '227 teaching into Kroeger 317 system and the motivation being to prevent lost of data in case of interference or interruption because the core-substreams are too close to the center of the channel (26 in figure 3){col.4, lines 54–57; Kroeger '227}.

**Regarding claim 16:** Kroeger '317 discloses all the claimed limitations, except "wherein said multi-stream digital audio broadcasting system is an all digital IBOC system and said core sub-streams are separated by a data stream".

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system (fig.2) and said core sub-streams are separated by a data stream (26 in fig.2). Therefore, it would have been obvious to an artisan to apply Kroeger '227 teaching into Kroeger's system ('317) and the motivation being to prevent interference to all-digital IBOC signals {col.3, lines 57-59; Kroeger'227}.

9. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroeger '317 in view of Engelbrecht.

**Regarding claim 17:** Kroeger '317 discloses all the claimed limitations, except "wherein no two sub-streams associated with the same audio segment are transmitted in the same time slot".

However, in the same field of endeavor, Engelbrecht discloses that no two sub-streams associated with the same audio segment are transmitted in the

same time slot {fig.3 wherein each program channel (substream) are transmitted in different timeslot; Engelbrecht; col.3, lines 25–35}. Therefore, it would have been obvious to an artisan to apply Engelbrecht's teaching into Kroeger's system ('317) and the motivation being to prevent no channel to listeners remains in a multipath null {col.3, lines 38–39, Engelbrecht}.

**Regarding claim 18:** Kroeger '317 discloses all the claimed limitations, except "wherein a unique time slot is allocated to each of said two or more sub-streams by introducing a delay between each of said two or more sub-streams".

However, in the same field of endeavor, Engelbrecht discloses that a unique time slot is allocated to each of said sub-streams by introducing a delay between each of said sub-streams {fig.5 in Engelbrecht; col.4, lines 30–33}. Therefore, it would have been obvious to an artisan to apply Engelbrecht's teaching into Kroeger '317 system and the motivation being to provide different programs of different quality over a waveform sharing {col.4, lines 41–50}.

10. Claims 12 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroegers ('317 & 227) as applied to claim 11 above, and further in view of Engelbrecht.

Regarding claim 12: Kroeger '317 discloses all the claimed limitations, except "said core sub-streams have a maximum separation in the time domain".

However, in the same field of endeavor, Engelbrecht discloses that said core sub-streams have a maximum separation in the time domain {fig.3 wherein each program channel (substream) are transmitted in different timeslot; Engelbrecht; col.3, lines 25-35}. Therefore, it would have been obvious to an artisan to apply Engelbrecht's teaching into Kroeger's system ('317) and the motivation being to prevent a channel providing null data to listeners {col.3, lines 38-39}.

Regarding claim 15: Kroeger '317 discloses all the claimed limitations, except "said multi-stream digital audio broadcasting system is an all-digital IBOC system and each of said core sub-streams has a maximum separation from one



of said enhancement sub-streams in the frequency domain and a maximum separation from the other enhancement sub-stream in the time domain”.

However, in the same field of endeavor, Kroeger '227 discloses that said multi-stream digital audio broadcasting (DAB) system is an all-digital IBOC system and each of said core sub-streams (40 in fig.3) has a maximum separation from one of said enhancement sub-streams (36 in fig.3) in the frequency domain (40 at 101,381–115,189 Hz and 36 at 184, 230–198,038 Hz of frequency band) and a maximum separation from the other enhancement sub-stream (46 in fig.4) in the time domain. Therefore, it would have been obvious to an artisan to apply all-digital IBOC system as taught by Kroeger '227 with subbands are positioned in different frequency band into Kroeger '317 system and the motivation being to minimize interference to adjacent all-digital IBOC or hybrid IBOC signals while provides additional capacity of other services {Kroeger '227; col.3, lines 57–59}.

Kroeger '317 does not explicitly disclose each of said core sub-streams having a maximum separation from the other enhancement sub-stream (46 in fig.4) in the time domain.

However, in the same field of endeavor, Engelbrecht further discloses in figures 3&5 wherein each sub-stream (program channel) has a unique time slot and frequency. Therefore, it would have been obvious to apply Engelbrecht's teaching of enhancement and core sideband substreams into Kroeger's system (327) wherein substream being separated in time, and the motivation being to prevent interference in between frequencies slots {col.3, lines 52-55, Engelbrecht} and to provide excellent quality audio to listeners {col.4, lines 30-32, 41-44, Engelbrecht}.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchau Ba Nguyen whose telephone number is 571-272-3148. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 2:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7629. The fax phone numbers for the organization where this application or proceeding is

Art Unit: 2616

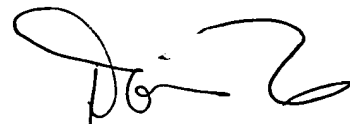
assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.



Phuongchau Ba Nguyen  
Examiner  
Art Unit 2616

June 6, 2006



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